



REPLY TO  
ATTENTION OF:

DEPARTMENT OF THE ARMY  
US ARMY CHEMICAL MATERIALS AGENCY  
TOOELE CHEMICAL AGENT DISPOSAL FACILITY  
11620 STARK ROAD  
STOCKTON, UTAH 84071

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UTAH DIVISION OF  
SOLID & HAZARDOUS WASTE

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PM0559-08

December 29, 2008

Tooele Chemical Agent Disposal Facility

SUBJECT: Temporary Authorization to Implement the TOCDF Resource Conservation and Recovery Act (RCRA) Class 2 Permit Modification Request TOCDF-MPF-02-1030, Metal Parts Furnace Zone Temperature Monitoring Thermocouple, EPA ID: UT 5210090002

Mr. Dennis Downs, Director  
Utah Department of Environmental Quality  
Division of Solid and Hazardous Waste  
288 North 1460 West  
Salt Lake City, Utah 84116-0690

Dear Mr. Downs:

In accordance with the TOCDF RCRA Permit, this letter is submitted to the State of Utah Division of Solid and Hazardous Waste (DSHW) requesting a Temporary Authorization (TA) to implement the Metal Parts Furnace (MPF) zone thermocouple change specified in the pending Class 2 Resource Conservation and Recovery Act (RCRA) permit modification TOCDF-MPF-02-1030, entitled 'Metal Parts Furnace (MPF) Zone Thermocouple Temperature Control'.

The temperature control requirement change (proposed by the permit modification) is to monitor the MPF Primary Combustion Chamber (PCC) zone temperatures with just one thermocouple instead of the currently required two per zone.

#### Background

Each of the three MPF PCC zones has two separate and independently-acting thermocouples (temperature indicating transmitters or TITs) to control the zone temperature. These pairs measure zone temperature simultaneously, and the two temperatures are averaged by the Programmable Logic Controller (PLC), which signals the furnace to add fuel if the zone is too cool or water if the zone is too hot. Because of this configuration, the system is constantly adding water or fuel, or both simultaneously, to try to keep the temperature within the prescribed limit. When one thermocouple measures a low temperature and triggers more fuel, then the other thermocouple often measures the PCC as too hot, which triggers the water spray. In this manner, the two thermocouple temperature measurements gradually diverge, continuing to trigger the fuel/water addition cycle. This creates PCC temperature and pressure fluctuations that trigger Automatic Waste Feed Cutoffs (AWFCOs).

The paired thermocouples activate these low-temperature AWFCOs independent of one another; i.e., either thermocouple can cause an AWFCO. If the temperature on either thermocouple drops below a set value, the PLC triggers an AWFCO,

automatically halting waste feed until the zone's temperature is greater than the alarm set point and the AWFCO is cleared.

The original MPF design located the water sprays, which cool the furnace, on the sides of the PCC next to the controlling thermocouples. This configuration worked well for ton containers or munitions with about a 5 percent heel because, when processed, this small heel would cause an increase in heat for only a short duration. However, the high heel tons have a much greater heel ( $\approx 40$  percent) that, during processing, causes a spike in heat that lasts longer than a few seconds, requiring more efficient cooling (i.e., water spraying) in the MPF. Therefore, the water spray system was modified; the water spray nozzles were relocated to the top of the PCC for greater cooling capacity to help control temperature when processing these higher heels, which in turn, changed the thermal response characteristics of the PCC. The current location of the water spray nozzles in reference to the two controlling thermocouples on the sides tends to create a larger difference between the thermocouple readings, which causes temperature control problems that often lead to unnecessary low-temperature AWFCOs.

TOCDF has submitted a Class 2 RCRA Permit modification that, when approved, will allow just one thermocouple to monitor and control temperature in each PCC zone at the current Operating Parameter Limits (OPL). Included in the OPL discussion are references to the data generated by the MPF 155 H ATB and MPF SWDT, which are the basis for the current temperature control OPLs. The thermocouples that Engineering selected to provide the low-temperature monitoring are 14-TIT-152 in Zone 1; -141 in Zone 2; and -153 in Zone 3. These thermocouples were chosen because they can adequately perform the temperature control function and would require the least amount of change to the PLC.

The TOCDF RCRA Permit Module 5, condition V.C.2.r, contains a table identifying the thermocouple TIT numbers for each couple per zone. Attachments 6 and 19 of the permit also contain tables (6-B and D-6-1, respectively) that identify the pairs of thermocouples (by TIT number) that are required to monitor temperature in each zone. In order to avoid low temperature/pressure AWFCOs by providing a more stable temperature during processing, TOCDF wants to change the requirement from two temperature monitoring/control thermocouples per zone to just one of the pair. This change is supported by 40 CFR 63.1209(j)1, which maintains that TOCDF must measure the temperature of the PCC at the most representative location of gas temperature in the combustion zone.

The only activity that will be conducted upon approval of this TA is that the PLC code will be re-programmed to use just one thermocouple to monitor and control temperature.

#### Necessity for TA

This TA is required to:

1. Prevent the disruption of waste management activities. A disruption is prevented by ensuring that TOCDF is configured to avoid AWFCOs, in this case, caused by low-temperature or resulting pressure fluctuations. These MPF AWFCOs disrupt processing and efficient use of the furnace to dispose of TOCDF waste materials. While the use of two thermocouples to control zone temperature worked well when TOCDF was processing projectiles and low heel ton containers (smaller amounts of agent), there are many ton containers with larger amounts of agent remaining in the stockpile, and these are expected to challenge the stability of the current temperature control system, increasing low-temperature/pressure AWFCOs. Although the Heel Transfer System (HTS) allows a portion of the solid heel to be transferred to a "child" ton container, the more solid heel that is removed, the more child tons are generated. These child ton containers must also be processed through the MPF, which would not only slow down processing, but would create more waste as well (see next paragraph).
2. Enable TOCDF to respond to sudden changes in quantities of wastes managed. The move from low heel to high heel ton containers has required TOCDF to respond to a change in the waste processed in the MPF. Most of the ton containers in the stockpile that were identified as L2, L4, and less than L6 have been processed, leaving a majority of L6s, which require the removal of a substantial amount of solid heel.

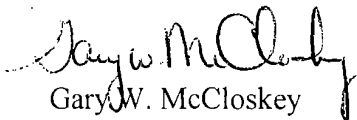
#### Compliance Adherence

The RCRA Permit requires the waste to be treated within certain temperature parameters as described in Module V, condition V.C.2.r, and tables in Attachments 6 and 19. This TA will not affect the temperature OPLs, only the way they are monitored; i.e., by using one thermocouple per zone rather than two. One thermocouple per zone is adequate to control temperature within the parameters described in the permit. Indeed, it is likely that this change will provide a more consistent temperature measurement and stable temperature control than the current method, resulting in fewer temperature/pressure fluctuations that cause AWFCOs.

Note that failure of a single zone thermocouple will cause all waste in the PCC to be low-temperature monitored, in accordance with Module V, condition V.C.2.r. If a regulated MPF PCC zone thermocouple fails, the reported zone temperature will be the high span value of the transmitter (i.e., 2,000 °F), which is higher than the low-temperature monitoring limit specified in Module V, V.C.2.r. In order to complete processing any waste remaining in the affected zone, the non-regulated thermocouple in each zone will be used to control furnace temperature until the tray exits that zone. So, if a regulated thermocouple fails, the high-temperature alarm will trigger an AWFCO alarm, and the operators will ensure that feed stops, the waste remaining in the furnace is processed, and that waste is low-temperature monitored in the MPF Discharge Airlock to ensure that no agent remains when the tray exits the furnace. When the waste has cleared the furnace and been monitored, the failed thermocouple will be replaced, after which waste feed will resume.

If you have any questions regarding this issue, please contact Ms. Sheila R. Vance at (435) 833-7577 or Mr. Trace Salmon at (435) 833-7428.

Sincerely,



Gary W. McCloskey  
EG&G Defense Materials, Inc.  
\*CERTIFICATION STATEMENT



Thaddeus A. Ryba, Jr.  
TOCDF Site Project Manager  
\*CERTIFICATION STATEMENT